NARBUTT, Boleslaw; doc. dr.; KUDLA , Teodor.

Adrenocortical activity in the Chiari-Frommel's syndrome. Endokr. Pol. 15 no.6:599-609 N-D '64

1. Katedra i Zaklad Patologii Ogolnej Slaskiej Akademii Medycznej i Poradnia Endokrynologiczna PSK I w Zabrzu (Kirownik: doc. dr. B. Narbutt); i Katedra i Klinika Poloznictwa i Chorob Kobiecych Slaskiej Akademii Medycznej w Zabrzu (Kierownik: prof. dr. M. Glowinski).

NARBUTT, Boleslaw, doc. dr.; ZYCH, Franciszek

Tropic activity of the hypophysis in some "hormonally inactive" tumors of the gland. Endokr. Pol. 16 no.3:217-231 My-Je'65.

1. Zaklad Patologii Ogolnej i Doswiadczalnej Slaskiej Akademii Medycznej (Kierownik: doc. dr. B. Narbutt); Poradnia Endokrynologiczna Panstwowego Szpitala Klinicznego Nr.1 w Zabrzu (Kierownik: doc. dr. B. Narbutt) oraz I Klinika Chorob Wewnetrznych Slaskiej Akademii Medycznej, Pododdzial Endokrynologiczny (Kierownik: prof. dr. J. Japa).

NARBUTT, Henryk, mgr. inz.

Schooling of rationalizers for the food industry.
Przegl techn 85 no.8:10 23 F '64.

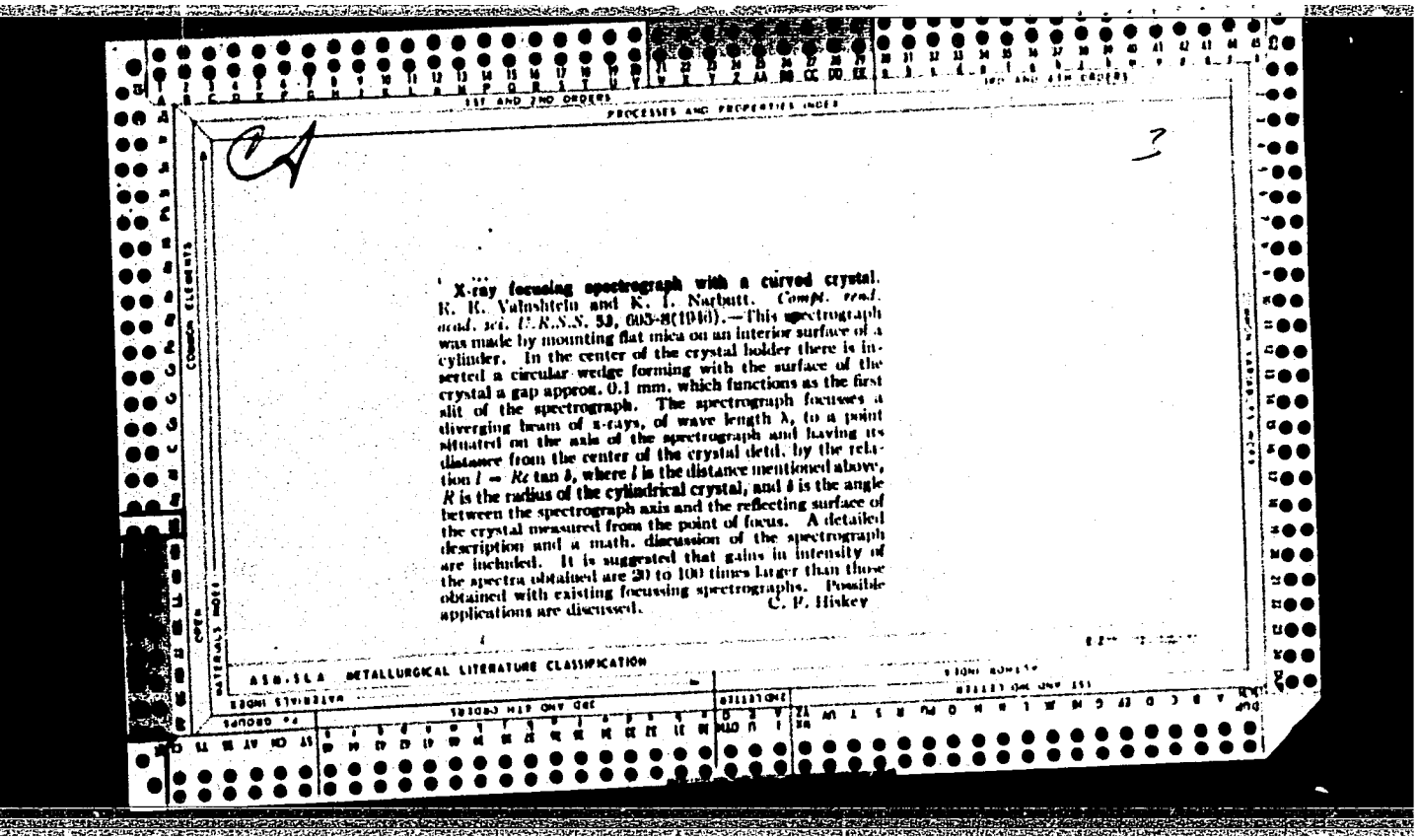
NARBUT, K.

Prices of meat products. Mias.ind.SSSR 31 no.2:39-41 '60.
(MIRA 13:8)

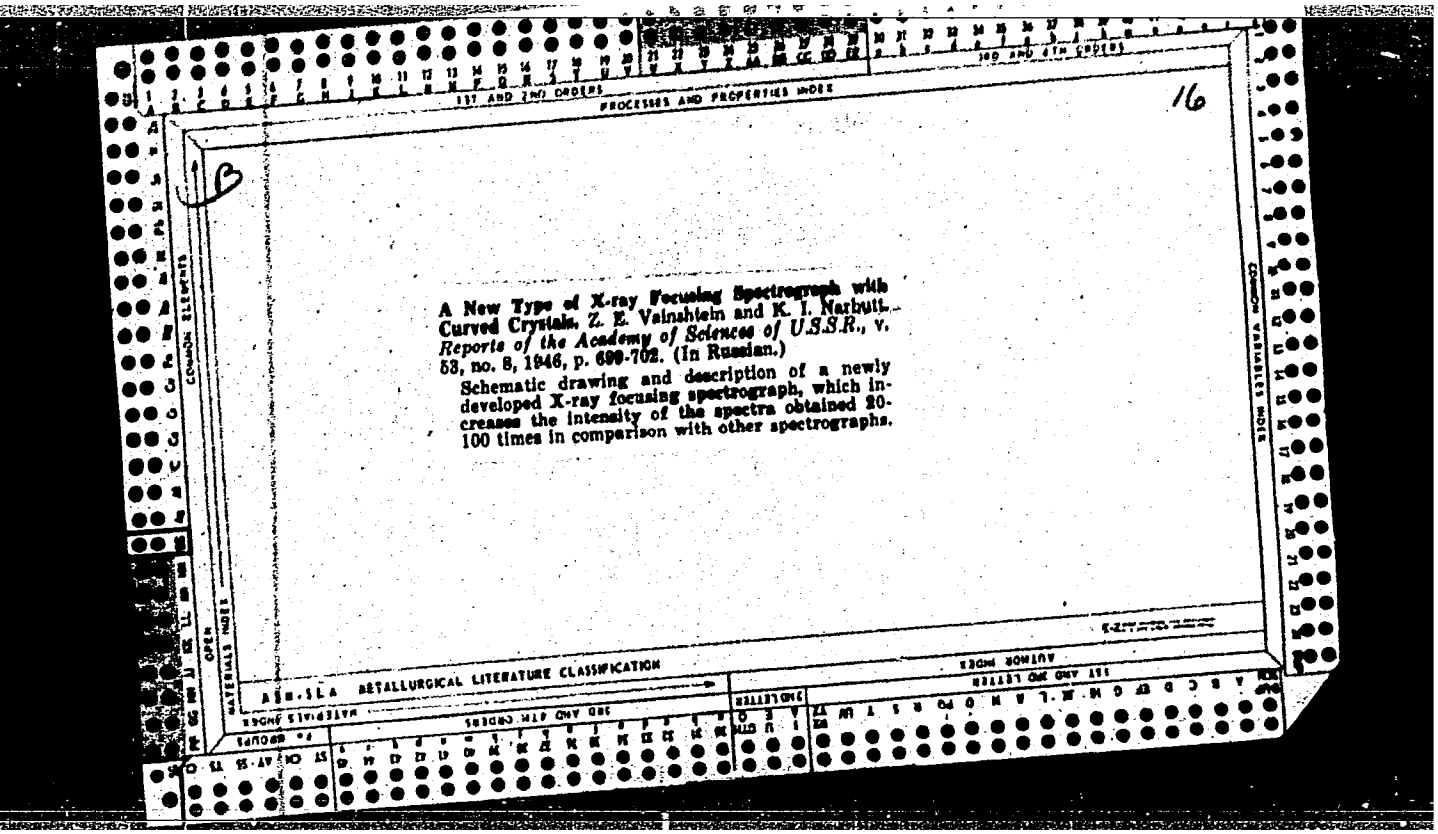
1. Byuro tsen pri Gosplane SSSR.
(Meat--Prices)

NARBUTT, K. I.

Structure of the *K*-edge of *X*-ray absorption spectra of atoms in the molecules of gas. E. E. Vainschtein and K. I. Narbutt (*Bull. Acad. Sci. U.R.S.S., Cl. Sci. Chim.*, 1946, 71—73).—Mathematical. Formulæ are developed for the structure of the *K*-absorption edge, for calculating the intensity of the selective lines, and for connecting these lines with degree of ionisation of the gas. There is a connexion between the structure of the *K*-edge and the at. no. of the element.
R. To.

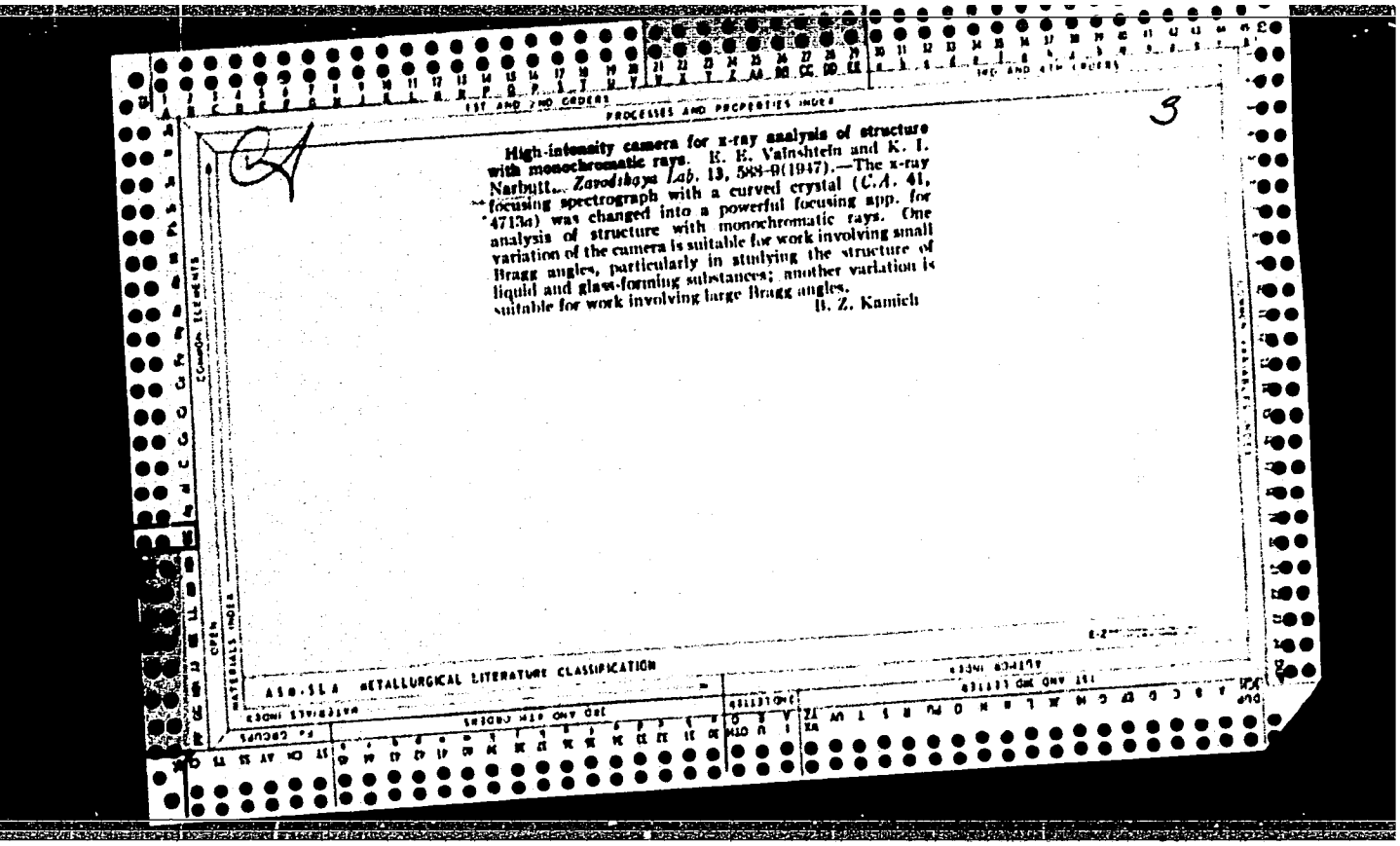


X-ray focusing spectrograph with a curved crystal. R. R. Valushtein and K. T. Nurbatt. *Compt. rend. acad. sci. U.R.S.S.* 59, 685-8(1948).—This spectrograph was made by mounting flat mica on an interior surface of a cylinder. In the center of the crystal holder there is inserted a circular wedge forming with the surface of the crystal a gap approx. 0.1 mm. which functions as the first slit of the spectrograph. The spectrograph focusses a diverging beam of x-rays, of wave length λ, to a point situated on the axis of the spectrograph and having its distance from the center of the crystal detd. by the relation $l = R\epsilon \tan \delta$, where l is the distance mentioned above, R is the radius of the cylindrical crystal, and δ is the angle between the spectrograph axis and the reflecting surface of the crystal measured from the point of focus. A detailed description and a math. discussion of the spectrograph are included. It is suggested that gains in intensity of the spectra obtained are 50 to 100 times larger than those obtained with existing focussing spectrographs. Possible applications are discussed. C. P. Hiskey

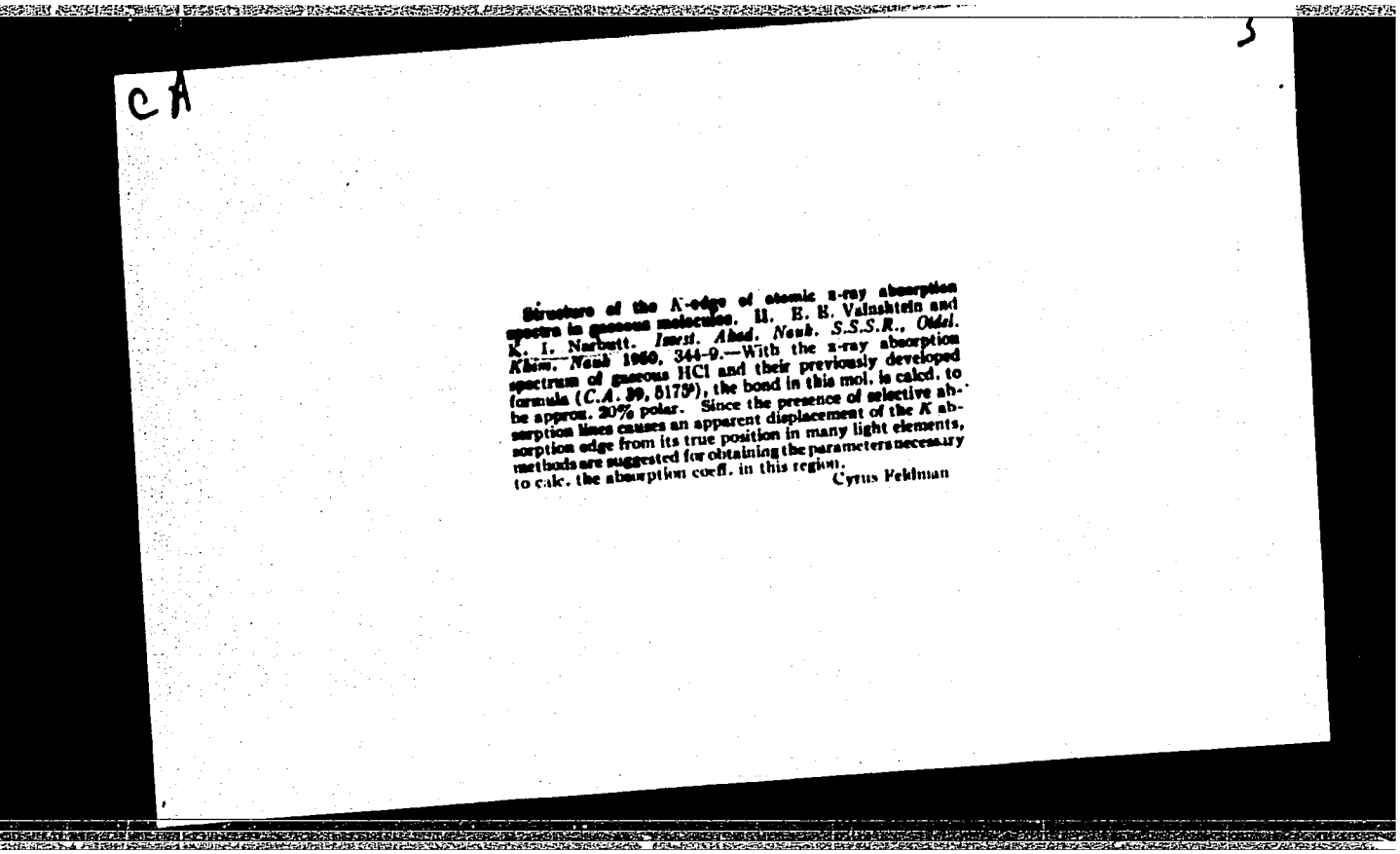


A New Type of X-ray Focusing Spectrograph with Curved Crystals. Z. E. Vainshtein and K. I. Narbutt. *Reports of the Academy of Sciences of U.S.S.R.*, v. 53, no. 8, 1946, p. 699-702. (In Russian.)

Schematic drawing and description of a newly developed X-ray focusing spectrograph, which increases the intensity of the spectra obtained 20-100 times in comparison with other spectrographs.



High-intensity camera for x-ray analysis of structure with monochromatic rays. K. E. Valishtein and K. I. Narbutt. *Zavodskaya Lab.* 13, 588–9(1947).—The x-ray focusing spectrograph with a curved crystal (*C.A.* 41, 4713a) was changed into a powerful focusing app. for analysis of structure with monochromatic rays. One variation of the camera is suitable for work involving small Bragg angles, particularly in studying the structure of liquid and glass-forming substances; another variation is suitable for work involving large Bragg angles.
B. Z. Kamich



CA

3

Structure of the K-edge of atomic x-ray absorption spectra in gaseous molecules. II. B. B. Valnshtein and K. I. Narbutt. *Inst. Akad. Nauk. S.S.S.R., Otdel. Khim. Nauk* 1960, 344-9.—With the x-ray absorption spectrum of gaseous HCl and their previously developed formula (*C.A.* 99, 8179^{g}), the bond in this mol. is calcd. to be approx. 20% polar. Since the presence of selective absorption lines causes an apparent displacement of the *K* absorption edge from its true position in many light elements, methods are suggested for obtaining the parameters necessary to calc. the absorption coeff. in this region.

Cyrus Feldman

C. A.

1951

3

Structure of the *K*-absorption spectrum of x-rays in zinc vapor. K. I. Narbutt (Inst. Geol. Sci., Acad. Sci. U.S.S.R.). *Izvest. Akad. Nauk S.S.S.R., Ser. Fiz.* **15**, 241–8(1951). The Zn vapor developed in a sealed quartz tube at 870° was irradiated with x-rays from a demountable tube with Cu anticathode. Microphotograms revealing new fine-structure details were obtained. The analysis and comparison with optical spectra of Ga I and Ga II show that there are 2 *K*-thresholds of absorption and 2 series of lines corresponding to neutral and to ionized Zn atoms. Math. treatment shows that 45% of the atoms are neutral, 55% ionized. The width of the *n-p* states of the ions is ~6 e.v., of the atoms ~3 e.v. the width of the ground state being the same. S. Pakswer

USSR/Physics - Spectroscopy 1 Jul 51

"Relation Between the Theory of Basic X-ray Absorption Boundary and the Theory of Fine Structure," R. L. Barinskiy, K.I. Narbutt, E.Ye Vaynshteyn, Inst of Geol Sci, Acad Sci USSR and Inst of Geochem and Analyt Chem imeni V.I. Vernadskiy, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXIX, No 1, pp 49-52

Authors establish formulas defining lines of selective absorption and real absorption boundary. Comparison of theory and exptl results is possible after elimination from exptl curve of absorption

210T80

USSR/Physics - Spectroscopy (Contd) 1 Jul 51

lines and boundary; center of latter should be taken as origin of fluctuations on energy scale. Presented by Acad A. A. Lebedev 30 Apr 51.

210T80

NARBUTT, K. I.

NARBUTT, K.I.

USSR/Physics - X-Ray Absorption Coefficient 11 Jul 51

"Magnitude of the Jump in the Coefficient of X-Ray Absorption," E. Ye Vaynshteyn, R. L. Barinskiy, K. I. Narbutt. Inst of Geochem and Analyt Chem imeni Vernadskiy and Inst of Geol Sci, Acad Sci USSR "Dok Ak Nauk SSSR" Vol LXXIX, No 2, pp 225-228

Study dependence of subject jump on atomic number; jump in the case of krypton; and jump of argon. States that Kramers' theory is not satisfactory for small Z starting at Z=25. State that the agreement of Jonsson's relation with data of expts is accidental. Knowledge of the effective quantum number n* is necessary. Submitted 20 Apr 1951 by Acad A. A. Lebedev.

PA 214T73

VAYNSHTEYN, Ye. Ye., BARINSKIY, R. L., NARBUTT, K. I.

Absorption Spectra

Computation of the structure of the principal X-ray absorption edge of atoms in molecules. Zhur. eksp. i teor. fiz. 23 no. 5. 1952.

Monthly List of Russian Accessions, Library of Congress, April 1953. UNCLASSIFIED.

NARBUTT, K. I.

USSR/Physics - Roentgenography

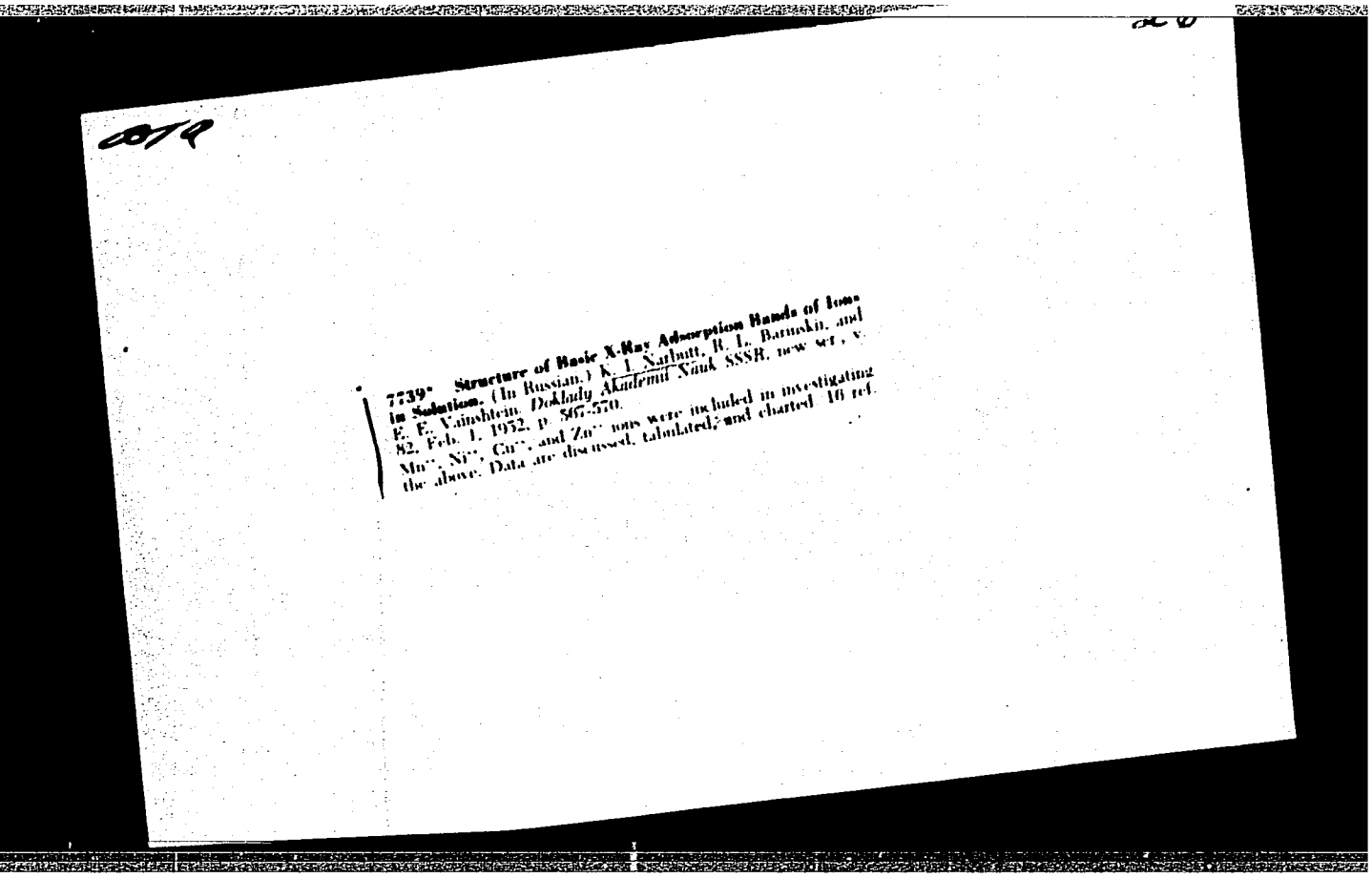
21 Jan 52

"Utilizing the Jump in the Coefficient of Roentgen Absorption For Calculating the Fine Structure of the Ground Region," R. L. Barinskiy, E. Ye. Vaynshteyn, K. I. Narbutt, Inst of Geol Sci and Inst of Geochem and Analyt Chem imeni V. I. Vernadskiy, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol LXXXII, No 3, pp 354-358

Give the results of calcns of the absorption spectra of germanium compds GeH_4, Ge_2H_6, $GeBr_4$, $GeCl_4$. Submitted by Acad A. A. Lebedev 22 Nov 51.

PA 211T98



7239* **Structure of Basic X-Ray Absorption Bands of Ions in Solution.** (In Russian.) K. I. Nalbutt, R. L. Barnukin, and E. E. Vainshtein. *Doklady Akademii Nauk SSSR*, new ser., v. 82, Feb. 1, 1952, p. 567-570.

Mn++, Ni++, Cu++, and Zn++ ions were included in investigating the above. Data are discussed, tabulated, and charted. 16 ref.

USSR/Physics - X-ray Absorption 11 Feb 52

"Structure of the Main X-ray Absorption Limit of Atoms in Polar Crystals and Its Connection With Ultraviolet Absorption," E. Ye. Vaynshteyn, K. I. Narbutt, R. L. Barinskiy, Inst of Geochem and Anal Chem imeni Vernadskiy, and Inst of Geol Sci, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 82, No 5, pp 701-704

Authors consider subject study in the case of KCl, using data of I. Trischka (cf. Phys Rev 67, 313, 1945). They oppose the quasi-atomic approach to the study of the X-ray absorption spectra of atoms in crystals. Authors use the method of free energy levels of polar crystals. Submitted by Acad A. A. Lebedev 10 Dec 51.

230T94

230T94

NARBUTT, K. I.

NARBUTT, K. I.

USSR/Physics - Transitional Elements 11 Mar 52

"Structure Governing the X-Ray Ground Limit of Absorption of the Transitional Elements When in Chemical Composition," R. L. Barinskiy, E. Ye. Vaynshteyn, K. I. Narbutt, Inst of Geol Sci and Inst of Geochem and Analyt Chem imeni Vernadskiy, Acad Sci USSR "Dok Ak Nauk SSSR" Vol LXXXIII, No 2, pp 199-202

Considers the very important exptl facts that confirm the representations, expounded in in current article, concerning the nature of the complex structure governing subject absorption in the atoms of the transitional elements. Concludes that the X-ray absorption spectra of the atoms in metals and compds are qualitatively very similar, which similarity is so great that it is difficult to admit any great difference in the causes for the appearance of the fine structure in both cases. Submitted by Acad A. F. Ioffe, 11 Jan 52.

PA 214T85

PA 245T108

NARBUTT, K. I.

21 Nov 52

USSR/Physics - X-Ray Spectra

"The Connection Between the Structure of Ground X-ray Border of Absorption and the X-ray Emission Spectra of Atoms in Molecules and Polar Crystals," K.I. Narbutt, E. Ye. Vaynshteyn, and R. L. Barinskiy, Inst of Geolog Sci and Inst of Geochem and Analytical Chem imeni Vernadskiy, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 87, No 3, pp 381-384

Discuss the energy spectrum of KCl crystal. Assert considerable difficulty in measuring the wave lengths of its lines, which accounts for the discrepancies between the computed and experimental values. Submitted by Acad I. I. Chernyayev 29 Sep 52.

245T108

245T108

NARBUTT, K. I.

Dissertation: "The Nature of the Fine Structure of X-Ray Absorption Spectra."
Cand Phys-Math Sci, Inst of Crystallography, Acad Sci USSR, Moscow, 1953.
(Referativnyy Zhurnal--Fizika--Moscow, Apr 54)

SO: SUM 243, 19 Oct 1954

NARBUTT, K.I.

USSR/Physics - X-Rays Spectrometer

"Short-Wave Universal X-Ray Spectrometer With Direct Indicator of Wave Length of Spectral Lines," K.I. Narbutt, Inst of Geo Sci, Acad Sci USSR

Iz Ak Nauk SSSR, Ser Fiz, Vol 17, No 2, pp 249-254

Attempts to construct an X-ray spectrometer of great resolving power, which would produce initial and secondary excitation of x rays and which would facilitate detn of necessary spectral lines. Describes the instrument and the X-ray tube manufactured in a plant of the Inst of Geol Sci. Received 17 Feb 53

262T101

NARBUTT, K. I.

USSR/Physics - X-Ray Spectra 11 Sep 53

"X-Ray Absorption Spectra of Zinc Contained Within the Molecules of $ZnCl_2$, $ZnBr_2$ and ZnS," K. I. Narbutt, Inst of Geol Sci, Acad Sci USSR

DAN SSSR, Vol 92, No 2, pp 273-275

Investigations of x-ray absorption spectra of free Zn atoms, started in Iz Ak Nauk, Ser Fiz 15, 2 (1951), are continued and applied to mols containing Zn atoms, the investigated substance being in gaseous state. Results are illustrated in graphs. Indebted to A. I. Yermilov. Presented by Acad A. A. Lebedev 10 Jun 53.

269T108

NARBUTT, K. I.

USSR/Physics - X-Ray Spectra 1 Nov 53

"Investigation of X-Ray Absorption Spectra of Zinc and Bromine Forming the $ZnBr_2$ Molecule," K. I. Narbutt, Inst of Geologic Sci, Acad Sci USSR

DAN SSSR, Vol 93, No 1, pp 21-24

Presents results of study of the superfine structure of K-spectrum of absorption by Zn and Br in the $ZnBr_2$ molecule. Method applied was previously described by author (DAN 92, 2(1953)). Finds the observed spectra to be of H type. Sees each K-spectrum as superposition of two series of lines, the primary

275T89

and the secondary. Indebted to R. L. Barinskiy. Presented by Acad A. A. Lebedev 10 Jun 53.

NARBUTT, K. I.

USSR/Physics - X-Ray Absorption Spectra FD-621

Card 1/1 : Pub. 146-11/18

Author : Narbutt, K. I.

Title : An investigation of x-ray absorption spectra of zinc in solutions

Periodical : Zhur. eksp. i teor. fiz. 26, 208-223, February 1954

Abstract : Presents the results of an experimental investigation of absorption x-ray K-spectra of solutions. Studied the dependence of absorption K-spectra of zinc in solution on the following: the chemical composition of the salt used in preparing the solution, the concentration of the solution, and the nature of the solvent and the type of ion formed in the solution. The effect exerted by the freezing of the solvent was also studied.

Institution : Institute of Geological Sciences, Acad Sci USSR

Submitted : July 6, 1953

VAYNSHTEYN, E.Ye.; BARINSKIY, R.L.; NARBUTT, K.I.

Theory of X-ray absorption spectra. (Remarks on A.I.Kostarev's and I.B.Borovskii's article). Zhur.eksp. i teor.fiz. 27 no.4:521-528 O '54. (MLRA 7:12)

1. Institut geokhimii i analiticheskoy khimii Akademii nauk SSSR.
(Absorption spectra) (X-rays)

NARBUTT, K I.

USSR/ Electronics - X-ray spectroscopy

Card 1/1 Pub. 124 - 31/39

Authors : Narbutt, K. I., Cand. Physico-Math. Sc.

Title : Conference of X-ray spectroscopy

Periodical : Vest. AN SSSR 25/5, 92 - 93, May 1955

Abstract : A report is given on the conference held in Moscow on the 25th and 26th January, called by the Commission on X-ray Photography at the Institute of Crystallography of the Academy of Sciences, and the Chair of Physics of Solids of the Physics Faculty of the Moscow University. The conference was most concerned with the use of X-ray spectroscopy for finding ways of solving the problems of synthesizing substances with specific properties.

Institution : .....

Submitted : .....

VAYNSHTEYN, B.Ye; BARINSKIY, R.L.; NARBUTT, K.I.

Regular patterns in the structure of principal X-ray K absorption limits for atoms in alkali metal halide crystals. Dokl.AN SSSR 105 no.6:1196-1199 D '55. (MLRA 9:4)

1.Institut geokhimii i analiticheskoy khimii i Laboratoriya mineralogii i geokhimii redkikh elementov, Institut geologicheskikh nauk Akademii nauk SSSR. Predstavlena akademikom N.V.Belovym.
(Alkali metal halides--Spectra) (X rays)

NARBUTT, K.I.

USSR/Physical Chemistry - Molecule. Chemical Bond. B-4

Abs Jour : Referat Zhur - Khimiya, No 6, 25 March 1957, 18192

Author : Narbutt, K.I.
Title : On the Structure of X-Ray Emission Lines of Ions in Solution.

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 1, 113-121

Abstract : X-ray emission K-spectra of ions Zn^{2+} and Br^- in solutions $ZnCl_2$ and $ZnBr_2$ are examined. Forms of lines K_α K_{α_2}, and K_β were studied for the ion Zn^{2+} in $ZnCl_2$ dissolved in water, acetone, methyl alcohol, glycerin and formic acid, and for ions Zn^{2+} and Br^- in aqueous solution of $ZnBr_2$. For the sake of comparison were obtained emission K-spectra of metallic Zn and of solid compounds of Zn: ZnO, ZnS, $Zn(CH_3COO)_2$, $ZnCl_2$, $ZnBr_2$, $ZnSO_4.nH_2O$.

Card 1/2 - 35 -

Category : USSR/Optics - X-rays

K-8

Abs Jour : Ref Zhur - Fizika, No 1, 195 No 2562

Author : Narbutt, K.I., Fridman, Ye.M.
Inst : Inst. of Geological Sciences, Academy of Sciences USSR
Title : High-Power Sealed X-Ray tube for Spectral Analysis

Orig Pub : Izv. AN SSSR, ser. fiz., 1956, 20, No 1, 136-141

Abstract : Description of powerful sealed X-ray tube BFR-70 for X-ray spectral analysis. The anode part of the tube is a massive copper body with drilled ducts for water cooling. The cathode, located in the rectangular shamber of the body, has a linear tungsten spiral. The anode is hard-soldered into the body and has a tungsten rectangular mirror, set at an angle of 60° to the tube axis. Cut in the wall of the body, parallel to the major axis of the mirror, is an output window for the emergence of the X rays, measuring 56 x 14 mm, covered with a filter in the form of a plate made of vacuum-packed beryllium 1 mm thick. The tube has a broad focus measuring 38 x 5 mm and permits the dissipation of high power by the anode (200 ma at 50 kv or 150 ma at 70 kv). The maximu, permissible anode voltage of the tube for prolonged continuous operation is 70 kv. The filament current does not exceed 7.4 a, the filament voltage is 13 v. The sensitivity in the case of fluorescent X-ray spectral analysis is 0.01%.

Card : 1/1

HARBUTT, K. I.

USSR/Fitting Out of Laboratories - Instruments, Their Theory, Construction, and Use, H

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61963

Author: Harbutt, K. I., Vaynshteyn, E. Ye., Gil'varg, A. B., Belyayev, L. M.

Institution: None

Title: New Vacuum X-Ray Spectrograph RSD-2

Original Periodical: Izv. AN SSSR, ser. fiz., 1956, 20, No 2, 152-160

Abstract: X-ray spectrometer RSD-2 is designed for X-ray spectra investigations of K-series elements from K to Cu and L-series elements from Ag to Ta, and also for the study of minute structure of emission lines and boundary absorption. Spectrograph parts, high voltage equipment, vacuum assembly and measurement instruments are set up as a single unit. The dismountable, cooled X-ray tube is made as a separate component connected to the central chamber by a bellows and mounted on an arm that rotates around the vertical axis of the

Card 1/2

Inst. Crystallography AS USSR
Inst Geol. Sci + Inst. Biochem + Anal. Chem.

USSR/Fitting Out of Laboratories - Instruments, Their Theory, Construction, and Use, H

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 61963

Abstract: central chamber. Angle range of arm rotation and actuation of the tube swinging mechanism are effected by 2 stops with Hg-contacts. Shape of the eccentric of the swinging mechanism is selected in such a manner as to ensure attainment of uniform sensitivity scale on roentgenoscopy. Focussing is effected in RSD-2 by a quartz crystal ground on both sides to a 1,000 mm radius and set in optical contact with cylindrical surface of the glass segment of crystal-holder (radius 500 mm). Discussions of effective surface of reflecting curved crystal 10 x 50 mm. Recording of X-ray spectra is done on motion picture film sensitive to wave length region 2,000-5,000 XE. To facilitate reading of spectra a wave length scale is printed on the film.

Card 2/2

NARBUTT, K.I.

Characteristics of the fine structure of the K-absorption edge of germanium halide molecules. Izv. AN SSSR.Ser.fiz.20 no.7: 780-783 Jl '56. (MLRA 9:11)

1. Institut geologicheskikh nauk Akademii nauk SSSR.
(Germanium halides--Spectra)

Narbutt, K. I.

Category: USSR/Fitting Out of Laboratories. Instruments. Their Theory, H. Construction and Use.

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 31133

Author : Belyayev L. M., Narbutt K. I., Stolyarova Ye. L., Konstantinov I. Ye., Alekseyev V. A., Gil'varg A. B., Smirnova I. S.

Inst : Academy of Sciences USSR

Title : Experimental Use of Luminescent Counter for Registering X-Ray Spectra.

Orig Pub: Izv. AN SSSR, Ser. fiz., 1956, 20, No 7, 801-808.

Abstract: Use was made of a luminescent counter consisting of NaI(Tl) crystal and FEU-19 with necking-in, for registering primary and fluorescence x-ray spectra, and for the study of fine structure of x-ray spectra. The electrical hookup consists of a preamplifier, wide-band amplifier, scaler attachment (16:1), PS-64 and electromechanical counter. Use of the counter enhances sensitivity of x-ray spectrum analysis by one order and lowers the exposure by 4 times, in comparison with a gas counter.

Card : 1/1

Narbutt, K.I.

AUTHOR: Barinskiy, R.L., Vaynshteyn, E.Ye., Narbutt, K.I. 48-10-4/20

TITLE: The Dependence of X-Ray Spectra of Atomic Absorption in Compounds that have the Character of Chemical Compounds (Zavisimost' rentgenovskikh spektrov pogloshcheniya atomov v soyedineniyakh ot kharaktera khimicheskoy svyazi)

PERIODICAL: Izvestiya Akad.Nauk SSSR, Ser.Fiz., 1957, Vol. 21, Nr 10, pp. 1351-1361 (USSR)

ABSTRACT: In the course of the present theoretical representation the previously (ZhETF, 23, 593, 1952, DAN SSSR, 82, 355, 1952, and 82, 701, 1952) found empirical rules found by the authors can be explained and connected with one another. This applies to the rules governing the structure of atom-absorption-X-ray-edges in multi-atom compounds in which polar connection plays a predominant part. For the case of di-atomic compounds the following may be said: 1.) The extension of the basic absorption line series in the cation spectrum must always be less than that of the satellite series in the same spectrum; with the anion the opposite is the case. 2.) The relative intensity of the satellite series of absorption lines in the cation spectrum must always be greater than the corresponding quantity in the absorption spectrum of the anion in the same compound.

Card 1/2

The Dependence of X-Ray Spectra of Atomic Absorption in Compounds that have the Character of Chemical Compounds

48-10-4/20

3.) The shape of the selection lines of absorption within the domain of each series in the cation- and anion spectra in compounds with marked ion character of the compound must be near the form of dispersion. With a weakening of the ion character of the connecting forces, the shape of the lines is bound to deviate ever more from the theoretical one. 4.) The reciprocal position of the basic and of the satellite series of the absorption lines is determined by that state which, of the two utmost states in the case of the polarization of the molecule, has the minimum energy. 5.) The anisotropy of the polarizability of multi-atom molecules (e.g. of the halide salts of some metals such as Zn, Ge, etc.) depends upon their structure and therefore (in contrast to diatomic compounds) is in no direct connection with the polarizability of the ions forming the compound. The conclusions drawn here are quantitatively confirmed by the experiments. There are 12 figures and 12 references, 11 of which are Slavic.

ASSOCIATION: IMGRE, GEOKhI, IGEM, AS USSR (IMGRE, GEOKhI, IGEM Akademii nauk SSSR)

AVAILABLE: Library of Congress

Card 2/2

NARBUTT, K. I.

AUTHOR: Narbutt, K.I., Smirnova, I.S. 48-10-6/20

TITLE: On the Influence Exercised by the Activator on the X-Ray Absorption Spectrum of a Luminescence Crystal (O vliyanii aktivatora na rentgenovskiy spektr pogloshcheniya lyuminestsentnogo kristalla)

PERIODICAL: Izvestiya Akad.Nauk SSSR, Ser.Fiz., 1957, Vol. 21, Nr 10, pp 1367-1374 (USSR)

ABSTRACT: The following is stated by the present paper: 1.) The influence exercised by the activator on the X-ray absorption spectrum of a luminescence crystal is determined on the basis of the examples of NaJ and CsJ crystals activated by thallium. 2.) On the long wave side of the absorption discontinuity in L_{III} spectra of iodine and cesium absorption in the CsJ(Tl) crystal the occurrence of additional absorption maxima, the position of which corresponds to the transitions of electrons in the local levels, was discovered. 3.) On the strength of the analysis of the longwave branch of the L_{III} spectrum of the iodine absorption in NaJ(Tl) crystal the values of length of wave bands in the optical domain were computed. These values agree with those wavelengths of the absorption bands found experimentally in optics, especially with the wavelength of the F-band of the NaJ(Tl) crystal. 4.) The changes on the shortwave side of the absorption discontinuity in L_{III} spectra of iodine and cesium

Card 1/2

Narbutt, K.I.

48-10-7/20

AUTHOR: Smirnova, I.S., Narbutt, K.I.

TITLE: The Investigation of the Fine Structure of Absorption-X-Ray Spectra of Halide-Alkaline Compounds (Issledovaniye tonkoy struktury rentgenovskikh spektrov pogloshcheniya shchelochno-galoidnykh soyedineniy)

PERIODICAL: Izvestiya Akad.Nauk SSSR, Ser.Fiz., 1957, Vol. 21, Nr 10, pp. 1375-1380 (USSR)

ABSTRACT: On the strength of the investigations carried out here the following may be said: 1.) The L_{III} edges of the absorption of cesium halides and the L_{III} edges of the absorption of iodine in all alkali iodides was investigated. 2.) An analysis of the structure of the L_{III} edge of cesium and of the L_{III} edge of iodine in the CsJ crystal was carried out on the basis of the assumption that the L_{III} spectrum is a result of the superposition of four series of lines of selective absorption and of continuous absorption. 3.) The L_{III} spectra of cesium in the cesium halides are characterized by an intense first absorption maximum and a weak second maximum. With the L_{III} spectra of iodine in the iodide group it is the other way round. 4.) The variation of the structure of the L_{III} spectra of cesium- and iodine absorption in transition from one

Card 1/2

The Investigation of the Fine Structure of Absorption-X-Ray Spectra of Halide-Alkaline Compounds

compound to another is essentially due to the change of intensity and form of the second maximum of absorption, of which it is assumed that they are connected with the 2p → ns transitions. 5.) The wavelength of the first maximum remains unchanged in the L_{III} spectra of cesium for all halides. The wavelength of the first maximum in the L_{III} SPECTRA OF IODINE VARIES in the domain 0,65 XE (1,4 eV). It is concluded that the energetic position of the lines of selective absorption does not depend on the chemical bond. The latter influences only the intensity ratio of the lines of the basic- and the satellite series, which leads to the observed shifting of the maximum, which is a sum of the basic- and satellite series. There are 1 table, 2 figures and 13 references, 9 of which are Slavic.

ASSOCIATION: IGEM AS USSR (IGEM Akademii nauk SSSR)

AVAILABLE: Library of Congress

NARBUTT, K.I.

Present-day state of X-ray spectrum analysis. Zav. lab. 24 no.5: 604-613 '58. (MIRA 11:6)

(X-ray spectroscopy)

MAKHUTT, K.I.; BESPALOVA, I.D.

Quantitative X-rays fluorescence spectrum analysis for the elements U, T_h, P_b, T_a, H_f, N_b, Z_r, Y and S_r. Zav. lab. 24 no.5:617-619 '58. (MIRA 11:6)
(X-ray spectroscopy) (Metals--Analysis)

SOV/48-23-5-5/31

24(7)

AUTHORS: Narbutt, K. I., Smirnova, I. S.

TITLE: On the Influence of Weak Impurities and Roentgenization on the X-ray Absorption Spectrum of the KCl Crystal (O vliyanii malykh primesey i rentgenizatsii na rentgenovskiy spektr pogloshcheniya kristalla KCl)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 5, pp 558 - 563 (USSR)

ABSTRACT: In continuation of earlier investigations carried out by the authors (Ref 1) concerning the influence of weak impurities on the structure of the X-ray absorption spectrum, further results are reported in the present paper. The experimental system used in the present case consisted of a spectrograph with a quartz crystal analyzer. The dispersion in the range investigated amounted to 5.14 ev/mm and the spectrum was taken with a microphotometer. The K-spectrum of the absorption of potassium in the KCl crystal with silver impurities of from 0.001% to 5% was investigated. Measuring results are shown in a diagram from which it may be seen that the displacement of the principal maximum of the absorption spectrum rapidly increases in the beginning with increasing impurity of silver,

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..., and at 5% the displacement attains a value of 0.9 ev. Investigations were also made of the influence exerted by tellurium admixtures to the CsJ crystal on the L_{III} absorption spectrum, and the same in the case of NaJ. Four diagrams are then given showing the measuring results of the potassium absorption with different impurities of silver and zinc compounds. The increasing displacement of the maxima of absorption with larger impurities may be clearly observed from them. Table 1 summarizes the defect levels occurring in the absorption spectrum of the crystals and finally, the results obtained hitherto are compared with the known ultraviolet absorption spectrum of the KCl crystal with silver impurities. There are 5 figures, 2 tables, and 10 references, 6 of which are Soviet.

NARBUTT, K.I.; LAPUTINA, I.P.; SHUBA, I.D.; KARDAKOV, K.A.; SAMOYLOV, G.P.

Isotopic composition of ore lead and age of minerals containing U, Th, and Pb according to the data of mass spectrometry and X-ray spectrum. Trudy IGEM no.28:122-137 '59. (MIRA 13:4)

(Lead--Isotopes) (Geological time) (X rays)

S/048/60/024/04/01/009
B006/B017

AUTHORS: Narbutt, K. I., Barinskiy, R. L., Smirnova, I. S.

TITLE: A Nuclear X-Ray Generator for Fluorescence Spectrum Analysis

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 4, pp. 354-361

TEXT: The present article is a reproduction of a lecture delivered at the 4th All-Union Conference on X-Ray Spectroscopy (Rostov-na-Donu, June 29 - July 6, 1959). In the introduction some suggestions made in non-Soviet periodicals on possibilities of replacing the X-ray tube by artificially radioactive sources, are discussed. The authors themselves used the gamma- and X-ray emission of Tu^{170} for fluorescent excitation of the (X-ray) K-radiation of the elements from ^{30}Zn to ^{92}U. In Tu^{170} radiation (Tu^{170} decays due to beta-gamma decay) the following occurs: 968-kev and 884-kev beta radiation, 84-kev gamma radiation, X-radiation of ytterbium and thulium ($Yb\text{-}K_{\alpha_{1,2}}$, $Tu\text{-}K_{\alpha_{1,2}} \simeq 52$ kev), and

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A Nuclear X-Ray Generator for Fluorescence Spectrum Analysis

S/048/60/024/04/01/009
B006/B017

bremsstrahlung (in slowing down the beta particles). The preparation of the Tu source is described. Fig. 1 shows a picture of the partly dismounted container so that also the internal part which houses the source can be seen. Fig. 2 gives a total view. In the following, the determination of the radiant energy is discussed. The instrument used for this purpose, which consisted essentially of a scintillation counter and an amplitude analyzer, is schematically shown in Fig. 3, and its details are described. Next, the author describes the background and possibilities of its reduction. Some details on the excitation of K-series of Ge (excitation energy 11.1 kv), Ag (excitation energy 25.5 kv), Eu (excitation energy 48.6 kv), Os (excitation energy 78.1 kv), and of U (excitation energy 115 kv) are then given. Fig. 5 shows the curves of pulse-amplitude distribution. Fig. 6 shows the Z-dependence of the excitation efficiency of K-emission of the elements from Z=30 to Z=92 by X-ray and gamma emission of Tu^{170}. It is shown that this excitation is the most effective in the range from Z=47 to Z=64. Further results on characteristic radiations, studied by means of a scintillation spectrometer (its characteristic dispersion D(E) and resolution $\Delta E/E$ are shown in Fig. 8), are discussed, and the amplitude distribution curves in recording the

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A Nuclear X-Ray Generator for Fluorescence Spectrum Analysis

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B006/B017

characteristic emission of tantalum, niobium, rare earths, and various minerals are reproduced. As may be seen from Fig. 11, each of the minerals investigated has its own characteristic amplitude distribution function corresponding to the spectral composition of the K-series. Hence, this method allows the determination of minerals. In a table the results of quantitative determinations of rare-earth groups by means of a nuclear generator and a scintillation spectrometer are compared with those obtained by means of an X-ray tube and the crystal diffraction method. Agreement is good. Analysis by means of a nuclear generator takes about one hour (measurement alone and the evaluation of results take only 20 minutes, the remaining time is used for preparing the sample). A. L. Yakubovich is mentioned. There are 11 figures, 1 table, and 14 references: 5 Soviet, 7 American, and 2 Scandinavian.

ASSOCIATION: IGYeM Akademii nauk SSSR (IGYeM of the Academy of Sciences, USSR). IMGRE Akademii nauk SSSR (IMGRE of the Academy of Sciences, USSR)

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24(7)

67359

SOV/20-130-2-13/69

AUTHORS: Narbutt, K. I., Barinskiy, R. L., Smirnova, I. S.

TITLE: X-Ray Spectroscopic Fluorescence Analysis With a Nuclear Source of Primary Radiation

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol 130, Nr 2, pp 291 - 294 (USSR)

ABSTRACT: The authors attempted to carry out an X-ray spectroscopic fluorescence analysis by replacing the X-ray tube by the artificially radioactive isotope Tu^{170}. The X-ray and γ-emission of this source were used for the fluorescence excitation of the K-radiation of the elements between ^{30}Zn and ^{92}U. Because of the low intensity of the excited fluorescence X-ray emission it was not necessary to investigate the spectral composition by the crystal-diffraction method and to use a scintillation counter with an amplitude analyzer. Pressed, hard tabloids were used. The Tu^{170} source (initial activity: 12 c) consisted of pulverulent Tu_2O_3 which was pressed into an aluminum-foil vessel, and was intensely

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X-Ray Spectroscopic Fluorescence Analysis With a Nuclear Source of Primary Radiation SOV/20-130-2-13/69

irradiated with neutrons. This Tu^{170} source emits the following radiations: 1) β-radiation with an energy of 968 and 884 kev; 2) γ-radiation with an energy of 84 kev; 3) the characteristic X-ray emission of ytterbium and thulium (primarily $YbK\alpha_{1,2}$ and $TuK\alpha_{1,2} \approx 52$ kev); 4) a bremsstrahlung occurring in the slowing down of β-particles in the substance of the source. Figure 1 shows the lines produced by the K-series of several elements under various conditions of excitation. The K-series of Ag (excitation energy of 25.5 kv) is found between the respective values of Ge and Eu. The K-series of Eu (excitation energy of 48.6 kv) is best excited by a 52-kev radiation. The γ-radiation and the bremsstrahlung also participate in its excitation. The K-radiation of Os (excitation energy of 78.1 kv) is excited by an 84-kev radiation and a bremsstrahlung, but not by a 52-kev radiation. The K-series of U is excited only by the bremsstrahlung. Figure 2 illustrates the dependence of the efficiency of excitation of the K-radiation of elements (from Z = 30 to Z = 92) by the X-ray emission and the γ-radiation

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X-Ray Spectroscopic Fluorescence Analysis With a Nuclear SOV/20-130-2-13/69
Source of Primary Radiation

of the Tu^{170} source upon Z. This nuclear generator is the most efficient for elements from Z = 50 to Z = 63. The occurrence of false maxima is pointed out. The dispersion curve of the scintillation spectrometer is a broken line consisting of two straight sections. Despite the low resolution of the scintillation spectrometer used it is possible to solve some analytical problems. This method is employed to analyze the element pairs Ta - Nb and Hf - Zr, for example. The authors tested the above-described nuclear generator first in a qualitative determination of the total amount of rare earths in various minerals. The results obtained were in close agreement with those found by ordinary fluorescence X-ray spectroscopic analysis and the crystal-diffraction method. The method described is further suited for a rapid determination of minerals, and the small size of the apparatus is advantageous for investigations in the open air. There are 4 figures, 1 table, and 11 references, 2 of which are Soviet.

Card 3/4

67559

X-Ray Spectroscopic Fluorescence Analysis With a Nuclear Source of Primary Radiation SOV/20-130-2-13/69

ASSOCIATION: Institut geologii rudnykh mestorozhdeniy, petrografii, mineralogii i geokhimii Akademii nauk SSSR (Institute for the Geology of Ore Deposits, Petrography, Mineralogy, and Geochemistry of the Academy of Sciences of the USSR). Institut mineralogii i geokhimii redkikh elementov Akademii nauk SSSR (Institute for the Mineralogy and Geochemistry of Rare Elements of the Academy of Sciences of the USSR)

PRESENTED: July 25, 1959, by N. V. Belov, Academician

SUBMITTED: July 24, 1959

Card 4/4

S/081/62/000/002/028/107
B151/B108

AUTHORS: Narbutt, K. I., Barinskiy, R. L., Smirnova, I. S.

TITLE: Application of nuclear radiation in X-ray spectral analysis

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 2, 1962, 137, abstract 2D15 (Sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR. v, 4. M., Gostoptekhizdat, 1961, 198-200)

TEXT: The construction of an РСЯ-1 (RSYa-1) X-ray spectrometer with a radioactive source instead of an X-ray tube is described. The characteristic radiation of the analyzed element is excited by a Tu^{170} source, of about 300 μcuries activity, and is registered by a scintillation counter with a differential pulse height analyzer at its output. The apparatus can be used for the separate determination of such pairs of elements as Ta and Nb, Hf and Zr, Sr and Ba, for determination of the overall content in rare-earth elements (REE) (Ce and Y groups separately), and also for the determination of the content of any element from As to Au when the sample contains no neighbouring (with regard to atomic number) elements. The sensitivity of determination of the total of Ce-group REE

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is 0.5 %; with an REE content of 5-100 % the relative error of the determination is 5 %. The apparatus can also be used for the analysis of minerals containing heavy elements (Z>33) as their basic components and differing in their contents of these elements. The form of the curve at the spectrometer output is determined by the chemical composition of the mineral. It is called the characteristic curve by the authors. The minerals can be identified from the shape of this curve. The apparatus is suitable for work in field conditions. [Abstracter's note: Complete translation.]

Card 2/2

24 3430 1227, 9901, 2607

26332
S/048/61/025/008/005/009
B104/B202

AUTHORS: Narbutt, K. I., Fridman, Ye. M., Nikolayenko, G. M.

TITLE: X-ray tube with constant vacuum for a long-wave X-ray spectrometer

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 8, 1961, 936-938

TEXT: The present paper was the subject of a lecture delivered at the 5th Conference on X-ray Spectroscopy at Khar'kov, January 30 to February 4, 1961. When studying the long-wave range of the X-ray spectrum, usually, detachable X-ray tubes have to be used in which the evacuated space of the X-ray tube is connected with the evacuated space of the X-ray spectrometer. Evacuation of this system encounters great difficulties in X-ray spectrum analysis. Since, however, a vacuum of about 10^{-2} mm Hg is sufficient to prevent absorption of the X-rays up to a wavelength of about 3.5 Å it has been attempted several times, to achieve a so-called separation of the vacuum. The authors describe a

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X-ray tube with constant vacuum ...

long-wave fluorescence spectrometer with a specialized X-ray tube with constant vacuum. In the construction of this spectrometer the authors attempted to meet the following demands: 1) The X-ray tube must be constructed such that the part of the tube with the window for the outlet of the rays can be inserted into the vacuum part of the spectrometer; 2) the window should be transparent to soft X-radiation; 3) the focus of the X-ray tube should be such that an Iogann type X-ray optical scheme has minimum dimensions; 4) the tube should operate at a 50-kv anode voltage with an anode current of 100 ma. Fig. 1 shows the scheme of the X-ray tube developed from these points of view. With the aid of the steel flange 2 and the sealing ring 3 the part 1 of the tube is hermetically attached to the part 4 of the vacuum spectrometer. The glass cylinder 7 is attached to the part 1 with the aid of the ring 6. The part is water-cooled, the water being supplied by 8. The beryllium disc 9 with a thickness smaller than 0.3 mm serves as window for the X-rays. The anode 10 consists of copper, tungsten, molybdenum or chromium. The cylindrical cathode 11 has a tantalum focusing head 12. The cylinder is fastened to the cross-shaped glass base 13 by means of a steel collar. The cathode is produced from thorium - tungsten carbide. 14 is a lead cover which is

attached to the body by means of the brass jacket 15. The X-ray tube described here is of the type БХВ 5 (BKhV5). Tests proved that with the aid of the spectrometer described, it is possible to excite the fluorescence X-ray spectra of the L-series of rare earth elements. The authors compared the effectiveness of the excitation of the L-spectrum of lanthanum (line II La_{α_1}) with the long-wave X-ray spectrometer of the type ДРУС-3 (DRUS-3) which is produced by the research department of Rostovskiy universitet (Rostov University) and the spectrometer described here. It was found that using the X-ray tube described here, a threefold excitation intensity of the fluorescence of the L-spectrum of lanthanum can be reached. Thus, the sensitivity of the X-ray spectrum analysis to elements of the group of the rare earths can be improved. There are 3 figures and 2 Soviet-bloc references.

Fig. 1; section of the X-ray tube for a long-wave spectrometer.
Legend: 1) atmosphere; 2) oil; 3) vacuum. The measures are given in mm.

35600
S/048/62/026/003/012/015
B102/B104

21.4100

AUTHORS: Narbutt, K. I., and Laputina, I. P.

TITLE: A possibility of determining the extent of uranium oxidation from X-ray emission spectra

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 3, 1962, 409 - 411

TEXT: Experiments were made with a longwave X-ray fluorescence spectrometer of the type ДРУС-2 (DRUS-2) to determine the spectral characteristics of different uranium oxides. The X-ray tube used operated with 20 kv and 40 ma, and the electrodes were well cooled. A bent quartz plate (radius of curvature: 500 mm) of 10·65 mm was used as crystal analyzer, a gas counter with a 20-μ Lavsan window served as recorder. The valence effects on the X-ray emission M-spectrum were studied with UO_2, UO_3 and U_3O_8. The last emission lines of the M_V-spectrum were found to be most sensitive to a change in valence. These lines are due to electron transitions from filled uranium levels to deeper M_V-levels. The range most sensitive to

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A possibility of determining...

the uranium valence was between the M_{γ}-line at 3.473 Å and the line of the N_{IV}-M_{III} transition at 3.514 Å. The intensity ratio, i.e. the ratio of the line areas for UO_3 and UO_2 was 1.6, a value which is in quite good agreement with the valence ratio 6:4. The shortwave edge of the U-IV omission band is shifted to lower energies by 2 ev, which is possibly due to the lattice extension when the U^{6+}ion is replaced by the larger U^{4+}ion. The U_3O_8 intensity spectrum is located between those of UO_2 and UO_3 and shows an energy shift toward the latter. R. L. Barinskiy is thanked for discussions. There are 2 figures and 1 Soviet reference.

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S/048/62/026/003/015/015
B102/B104

AUTHOR: Narbutt, K. I.

TITLE: X-ray spectroscopic fluorescence micro-analyzer

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 3, 1962, 423 - 428

TEXT: A simple apparatus is described, which is designed for X-ray spectrum analysis of mineralogical microsections. An area of 0.2 mm^2 is covered by one analysis which requires 0.1 mg of substance. The minimum content of the element to be determined is 2 μg. The sensitivity of the analyzer is 2%. The apparatus was tested with a polished microsection consisting mainly of Fe, Ni, and As. For different minerals different characteristic curves are obtained, which can be used to identify the minerals. There are 6 figures and 22 references: 6 Soviet and 16 non-Soviet. The four most recent references to English-language publications read as follows: Analyt. Chem., No. 8, 31, 1960; D. A. Melford, New Scientist, 6, No. 153, 746, 1959; R. M. Dolby, Proc. Phys. Soc., 73, No. 1, 81, 1959; P. Duncumb, Brit. J. Appl. Phys., 10, 420, 1959.

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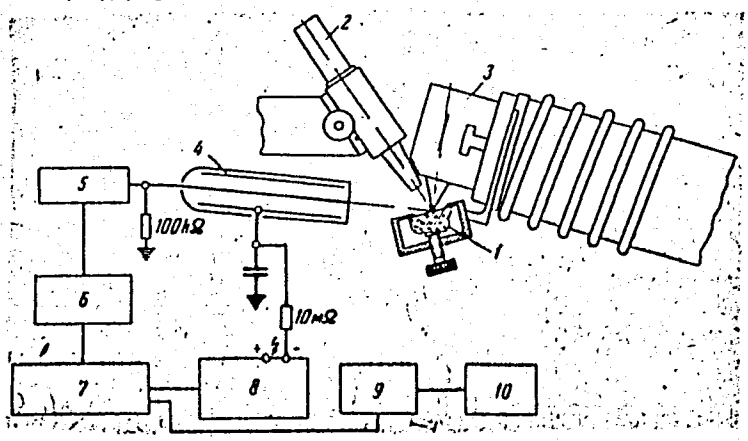
S/048/62/026/003/015/015
B102/B104

X-ray spectroscopic ...

Fig. 1. X-ray fluorescence micro-analyzer.
Legend: (1) specimen; (2) microscope; (3) 11- БХВ(11-BKhV) X-ray tube; (4) proportional counter; (5) pre-amplifier; (6) amplifier; (7) pulse-height analyzer.



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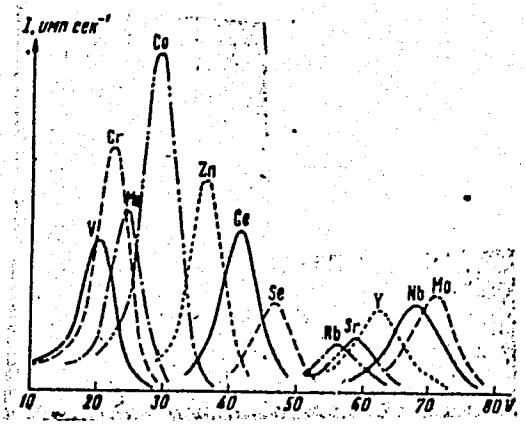
B102/B104

X-ray spectroscopic ...

Fig. 4. Spectral resolution of micro-analyzer. Abscissa: thresholds of pulse-height analyzer.



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S/048/63/027/003/007/025
B117/B234

AUTHORS: Narbutt, K. I., and Smirnova, I. S.

TITLE: X-ray K-absorption spectrum and the conduction band in alkaline halogenide crystals

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 340-347

TEXT: As there is at present no agreed interpretation of the nature and fine structure of absorption spectra an attempt was made to relate the experimentally observed structure of such a spectrum to the energy levels of the conduction band. K-absorption spectra of potassium in KCl, KBr and KI were examined. To determine the spectral structure as regards the conduction band, data for X-ray spectra were compared with published data for the optical absorption of crystals with F centers. In view of the lower sensitivity of X-ray spectral analysis as compared with the optical method it was necessary to use crystals having a large number of holes. These were prepared by way of small admixtures or through previous powerful X-irradiation, the introduction of the admixtures causing the

holes to form electron capture centers. On comparing the absorption spectra of irradiated crystals with those of crystals not previously irradiated it was possible, on the basis of the observed oscillations, to separate out those of them which represented the occupation of halogenide holes by electrons emitted from the K shell of the potassium during the absorption of X-rays. The investigation showed that only the first line of selective absorption in the X-ray K-absorption spectrum of alkaline halogenide crystals can have originated in an exiton. All the rest of the structure is produced in consequence of a transition of the K-electron into the conduction band of the crystal. There are 5 figures and 1 table.

ASSOCIATION: IGEM AN SSSR

S/048/63/027/003/008/025
B117/B234

AUTHORS: Narbutt, K. I., and Izraileva, L. K.

TITLE: Structure of the K-absorption spectrum of the Zn^{2+} ion

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 348-350

TEXT: The influence which the field of an octahedron of 6 H_2O exerts on the structure of the first section of the K-absorption spectrum of the Zn^{2+} ion was examined. The structure of this section was assumed to be determined by the transition of the K-electron from its bound state into the periphery of the Zn^{2+} and the wave functions of these states were assumed to contain admixtures of p-states. It was shown that the energy of these bound states can be determined by calculating the nondiagonal matrix elements V_{ik} of the field of the octahedral symmetry in the states i and k, and by solving the secular equation. Estimates resting upon certain postulates, and carried out in this way, lead to

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Structure of the K-absorption...

the following conclusions: In the field of an octahedron of 6 H_2O the interval between the bound levels of the K electron emitted during absorption tends to diminish by comparison with the intervals between the levels of the isolated Zn^{2+} ions. Here the absorption lines which form no series similar to hydrogen may overlap. Presumably the first absorption line and the whole of the first section of the spectrum under examination is the result of such overlapping, but this conclusion calls for more exact confirmation taking account also of the steric symmetry of hydrated crystals. A final remark is that interest attaches to the spectrum of the Zn^{2+} ion dissolved in water with a concentration of 0.1 N, for the K spectrum of a 1 N solution (K. I. Narbutt, Zh. exprerim. i teoret. fiz., 26, no. 2 (1954)) showed, on the average, the same interval between Zn^{2+} and anion as in a crystal. This suggests that the structure of the spectrum examined is not influenced solely by the field of the solvent. There is 1 figure.

ASSOCIATION: IGEM AN SSSR
Inst. Geology of Mineral Deposits, Petrography, Mineralogy, & Geochemistry

Card 2/2

S/048/63/027/003/023/025
B106/B238

AUTHORS: Narbutt, K. I., Perel'man, S. M., Prager, I. A., and Kharlakov, V. A.

TITLE: An attempt to use proportional counter tubes for X-ray spectral analysis

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 27, no. 3, 1963, 430-437

TEXT: Two types of proportional counter tubes were tested, type 1 with its entry window in the side, and type 2 with a window in the support of the counter. All the windows were made of hermetic beryllium 150 - 200 μ thick. Type 1 instruments were filled with either argon, krypton or xenon, and in every case 10 % isopentane was added as an extinguisher. The anode filaments in type 2 were fixed straight to the support in order to reduce the dead space and the action of boundary effects on the amplitude resolution of the counter. The filling is a krypton-isopentane mixture at a pressure of c. 400 mm Hg. The electronic counting device is made up of a

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B106/B238

An attempt to use ...

pre-amplifier and a standard CCA (SSD) diffractometer counter unit. The amplitude distribution for characteristic K lines of various energies was studied under various conditions using a type 1 counter filled with argon. The mean pulse height was found to depend linearly on the quantum energy of the exciting radiation. The way in which the energy resolution of the instruments depends on the energy of the radiation to be recorded was also determined. The amplitude distribution of the fluorescent X-radiation was measured for the elements K to Cs in the periodic table using the three sorts of type 1 tube. In argon, a small argon loss peak occurs even in the vanadium spectrum, but L series analysis is possible from silver onwards. In krypton, the K spectra of the elements up to selenium are free of irregularities, but from rubidium onwards a distinct krypton loss peak occurs. The xenon loss peak is very small in xenon filled tubes, which are therefore highly suitable for K series analyses on elements up to Cs, and L series analyses thereafter. The following were also determined for all the counter tubes: the dependence of the pulse height on the working voltage; the dependence of the duration of the pulse

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B106/B238

An attempt to use ...

on the load resistance; the dependence of the resolution on the working voltage, i. e. the gas amplification factor, and on the load resistance. The resolution is practically independent of the working voltage when this is near 400 v for type 1 counters or 150 v for type 2 counters. The characteristics of these counters does not change in course of two years operation. There are 13 figures.

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ACCESSION NR: AP4038778 S/0048/64/028/005/0857/0862

AUTHOR: Narbutt, K.I.

TITLE: Excitation of the spectrum by a monochromatic x-ray beam in local fluorescence analysis /Report, Seventh Conference on X-Ray Spectroscopy held in Yerevan 23 Sep to 1 Oct 1963/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v.28, no.5, 1964, 857-862

TOPIC TAGS: x-ray emission, spectral analysis, microanalysis, x-ray spectrograph

ABSTRACT: A method of local x-ray fluorescence analysis is proposed in which the fluorescence is excited by a monochromatic x-ray beam with variable wavelength. In this system one successively determines the concentrations of the elements present in order of increasing atomic number by gradually decreasing the wavelength of the exciting radiation. When the threshold for exciting fluorescence in the element of atomic number Z is reached, one subtracts from the total fluorescence intensity the contributions from the lighter elements, the concentrations of which have been already determined, and determines the concentration of element Z from the difference. This method has the advantage over the use of a polychromatic exciting beam, hither-

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ACCESSION NR: AP4038778

to employed in those cases when excitation by an electron beam is unsuitable, in that it permits distinguishing elements with atomic numbers differing only by unity. This gain in resolving power stems from the relative sharpness of the threshold for excitation of fluorescence compared with the width of the fluorescence band, and from the circumstance that the wavelength analysis of the x-rays is performed in the monochromator, where the x-ray intensity is adequate, rather than in the weak beam of fluorescence radiation. An experimental monochromator for performing local fluorescence analysis by the proposed method was constructed and its performance was tested. The design of the monochromator was based on that of a previously proposed axially symmetric x-ray spectrometer (E.Ye.Vaynshteyn and K.I.Narbutt,Dokl.AN SSSR 43,699,1946) and is illustrated in Fig.1 of the Enclosure. In this instrument the x-rays are produced on a ring-shaped target T, diffracted by a ring-shaped crystal K, and brought to a focus at F. The cicular bevelled edge screen D serves to prevent undiffracted x-rays from reaching the sample at F. The wavelength is altered by so changing the positions of both the x-ray tube and the crystal by means of two screws of different pitch on the same shaft as to keep the position of the focal point fixed. Four different types of ring-shaped crystals are described and were constructed and tested. The one which gave the greatest intensity and was employed in the subsequent experiments consisted of two LiF plates bent into semicircles of 14 mm

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ACCESSION NR: AP4038778

radius and held in an aluminum frame. Reflection was from the (200) planes. The area of the focal spot was 3 mm^2, but it is believed that a sharper focus can be achieved by more careful construction. An artificial mixture of gallium,germanium and arsenic was analyzed, and the analysis is described in detail as an example of the application of the method. These adjacent elements were clearly separated, but the error of the analysis is not given. Orig.art.has: 5 formulas and 7 figures.

ASSOCIATION: Institut geologii rudny*kh mestorozhdeniy, petrografii, mineralogii i geokhimii Akademii nauk SSSR (Institute of Geology of Ore Deposits, Petrography, Mineralogy and Geochemistry, Academy of Sciences, SSSR)

SUBMITTED: 00 DATE ACQ: 12Jun64 ENCL: 01

SUB CODE: OP NR REF SOV: 003 OTHER:001

ACCESSION NR: AP4038778

ENCLOSURE: 01

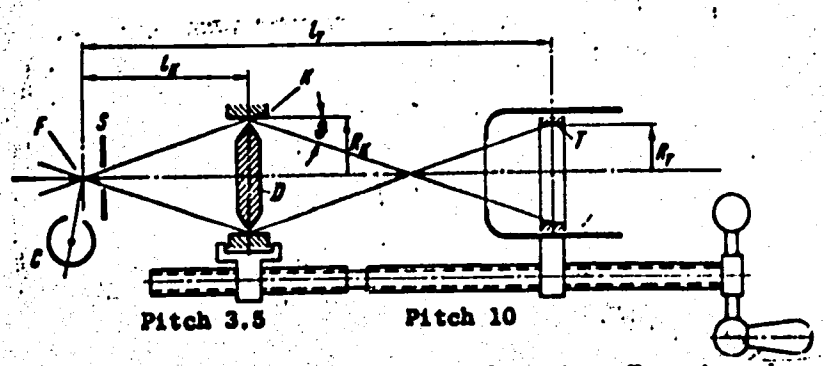

Fig.1. Diagram of the axially symmetric monochromator. T - ring-shaped anode of the x-ray tube, K - ring-shaped crystal, D - bevelled edge circular screen, S - aperture, θ - Bragg angle, F - focal point, C - location of the proportional counter measuring the fluorescence.

ALWAS, Irena; DERLIKOWSKI, Jerzy; NARBUTT-MERING, Alina-Barbara; PERKOWSKI, Edward; WEGLOWSKA, Wanda

Use of paper iontophoresis for the separation of alkaloid mixtures. Acta pol. pharm. 28 no.5:357-363 '61.

1. Z Zakladu Chemii Analitycznej Instytutu Lekow Kierownik Zakladu: doc. mgr inz. Z. Margasinski.
(ALKALOIDS chem) (IONTOPHORESIS)

DERLIKOWSKI, Jerzy; NARBUTT-MERING, Alina Barbara; PERKOWSKI, Edward; WEGLOWSKA, Wanda; POTAJLO-GULINSKA, Joanna

Use of paper iontophoresis for the separation of some drug mixtures. Acta Pol pharm. 21 no.1:9-18 '64.

1. Z Zakladu Chemii Analitycznej Instytutu Lekow (Kierownik: doc. mgr inz. Z. Margasinski).

NARBUTT-MERING, Alina Barbara; WEGLOWSKA, Wanda

Identification of decomposition products of the thiopental derivatives. Acta Pol. pharm. 22 no.1:13-20 '65.

1. Z Zakladu Chemii Analitycznej Instytutu Lekow (Kierownik: doc. mgr. inz. Z. Margasinski).

NARCHAYEV, A.

First boundary value problem for elliptic equations degenerate at the domain boundary. Dokl. AN SSSR 156 no. 1:28-31 My '64. (MIRA 17:5)

1. Matematicheskiy institut im. V. A. Steklova AN SSSR. Predstavleno akademikom S. L. Solbolevym.

ACCESSION NR: AP4035802 S/0020/64/156/001/0028/0031

AUTHOR: Narchayev, A.

TITLE: First boundary-value problem for elliptic equations degenerating on the boundary of the region

SOURCE: AN SSSR. Doklady, v. 156, no. 1, 1964, 28-31

TOPIC TAGS: boundary value problem , elliptic differential equation function space

ABSTRACT: Given a region $Q \subset R^n$, lying in $x_n > 0$, with boundary $\Gamma = \Gamma_1 \cup \Gamma_0$, where Γ_0 lies in $x_n = 0$, the fourth-order elliptic equation considered here degenerates into a "quesi-parabolic" one on Γ_0. The equation is of the form

$$Lu = L_0 u + Au = h(x), \qquad (1)$$

where

$$L_0 u \equiv \sum_{i,j=1}^{n} \frac{\partial^2}{\partial x_i \partial x_j}\left(A_{ij}(x)\frac{\partial^2 u}{\partial x_i \partial x_j}\right) + b\frac{\partial^2 u}{\partial x_n^2}$$

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$$L;\ Au = \sum_{l/a+s/n<1} a_{(l,\ s)}(x)\frac{\partial^s}{\partial x_n^s}D^l u$$

$$s>0,\ l\geqslant 0$$

are integers; $x=(x_1, \ldots, x_n)$; $l=l_1+l_{n-1}$; $D^l=\partial^l/\partial x_1^{l_1}\ldots\partial x_{n-1}^{l_{n-1}}$; $b=\pm 1$;

the coefficients $A_{ij}(x)=A_{ji}(x)$; $a_{(l,\ s)}(x)$ are sufficiently smooth in $\bar{Q}$, and for arbitrary ξ_i such that

$$\sum_{i,\ j=1}^{n-1} A_{ij}(x)\xi_i\xi_j>\theta^2>0$$

$$\xi_l:\ \sum_{j=1}^{n-1}\xi_j^2\neq 0; \qquad (2) \qquad c_{l1}^2 x_n^{\alpha_l}\leqslant A_{ln}(x)\leqslant c_{l2}^2 x_n^{\alpha_l}\quad (l=1, \ldots, n);$$

for some non-negative members α_i. Two problems are considered. Problem D: find a solution u(x) of (1), vanishing on Γ, together with its first partial derivatives if (a) $b=-1$, α_n arbitrary, or (b), $b=+1$, $\alpha_n<1$. Problem E: find a solution of (1) vanishing on Γ, while its first order derivatives vanish on Γ_1, if $b=+1$, $\alpha_n\geqslant 1$. Existence and uniqueness of a "weak" solution of Problem D and of a "strong" solution of Problem E are moved under certain hypotheses. The hypotheses and the definitions are given in terms of a number of function spaces. For example, ω_2^2 is the Hilbert space obtained by

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taking the closure of the set of functions in $C^{\infty}(\bar{Q})$ which are zero near Γ_1 with respect to the norm

$$\|u\|_*^2 = \iint_Q \left[\sum_{i,j=1}^{n} A_{ij}(x) \left(\frac{\partial^2 u}{\partial x_i \partial x_j} \right)^2 + \left(\frac{\partial u}{\partial x_n} \right)^2 \right] dQ. \qquad (3)$$

A "weak" solution of problem D, for $\alpha_n \geq 1$, is a function $u(\cdot) \in \overset{\circ}{W}{}_2^{\alpha}(\alpha)$ satisfying $(h,v) = (u, L^* v)$ (4), for all functions $v(x) \in \overset{\circ}{W}{}_2^{\alpha}(Q)$ [functions in $W_2^{\alpha}(Q)$ satisfying $v|_{\Gamma} = 0$, $\frac{dv}{\partial x_n}\Big|_{\Gamma} = 0$, for $i = 1, \ldots, n$], where L^* is the formal adjoint of L. The results obtained hold for equations of higher order. "In conclusion, I offer my sincere gratitude to my scientific guide V. N. Maslenikova." Orig. art. has: 12 equations.

ASSOCIATION: Matematicheskiy institut im. V. A. Steklova Akademii nauk SSSR (Mathematics Institute, Academy of Sciences, SSSR)

SUBMITTED: 24Dec63 ENCL: 00

SUB CODE: MA NR REF SOV: 010 OTHER: 000

Card 3/3

NARCHEMASHVILI, O. V.

USSR/ Geology

Card 1/1 Pub. 22 - 32/45

Authors : Gimmel'farb, B. M., and Narchemashvili, O. V.

Title : New data on the phosphatization of Upper Cretaceous deposits in Georgia

Periodical : Dok. AN SSSR 103/2, 291-293, Jul 11, 1955

Abstract : Geological data are presented on the phosphates discovered among the Upper Cretaceus deposits of Georgian SSR. Seven USSR references (1923-1948).

Institution : State Sc. Res. Inst. of Mining Chemical Raw Materials

Presented by : Academician N. M. Strakhov, February 9, 1955

NARCHEMASHVILI, O. V., Cand Geol-Min Sci -- (diss) "Upper Cretaceous Phosphorites of Georgia." Mos, 1957 . 16 pp (State Sci Res Inst of Mining-Chemical Raw Materials GIGKhS), 150 copies (KL, 49-57, 111)

NARCHEMASHVILI, O.V. (Tbilisi); SOKOLOV, A.S. (Moskva)

Cave phosphorites of Java. Priroda 52 no.2:90-92 '63.
(MIRA 16:2)

(Java—Phosphorites)

NARCHENKO, G.F., dotsent; REBNYANSKAYA, Ye.V., assistent

Fusariotoxicosis in swine in Stavropol Territory. Veterinariia 36 no.9:70-72 S '59. (MIRA 12:12)

1.Stavropol'skiy sel'skokhozyaystvennyy institut.
(Stavropol Territory--Swine--Diseases and pests)
(Feed and feeding stuffs--Hygienic aspects)

NARCHOMASVILLI, A. N.

4690. Narchomashvili, A. N. kompleksnaya mekhanizatsiya zhivotnovodxheskikh ferm tbilisi, izd-vo gruz. s-kh in-ta, 1954. 8 s. sxill. 20 sm. (upr. s.kh. propagandy m-va sovkhozov gruz. ssr) 2,000 ekz. Bespl-naobl avt ne ukazany

NARCHOMASHVILI, A. N.

4689 Narchomashvili, A. N. kak mekhanizirovat' vodosnabzheniye vzzhivotnovodstve. tbilisi, izd-vo gruz s-kh. in-ta, 1954. 12 s. s ill 20 sm. (upr. s-kh propagandy m-va sovkhozov gruz. ssr) 2,000 ekz bespl.—na obl. avt. ne ukazany.—na gruz yaz.-/54-56751/ 636.0025/628.18:636

Narchomashvili A. N.

7762 Kak vvelichit' urozhay tsitrusovykh kul'tur. tbilisi, izd-vo gruz. s.-kh in-ta, 1954. 24s. 19sm. (m-vo sovkhozov gruz. ssr. upr. s.-kh. propagandy). 2.000 ekz. bespl.-na gruz. yaz.-(55-2578) 634.3(47.922)

30. Knizhnaya Letopis', Vol. 7, 1955

NARCHUK, E.P.

Propagation rhythm and food plants of Oscinella pusilla Mg.
Zool. zhur. 34 no.5:1080-1084 S-O '55. (MLRA 9:1)

1.Kafedra entomologii Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova.
(Frit flies)

MARCHUK, E. P.:

Marchuk, E. P.: "Material on the systematics and ecology of the genus Oscinella." Moscow Order of Lenin and Order of Labor Red Banner State U imeni M. V. Lomonosov. Moscow, 1956. (Dissertation for the Degree of Candidate in Biological Science)

SO: Knizhnaya letopis', No 27, 1956. Moscow. Pages 94-109; 111.

MARCHUK, N.P.

Data on the fauna and ecology of frit flies (Diptera, Chloropidae) in the vicinity of Kurgan. Ent.obez.35 no.1:132-138 '56.(MLRA 9:10)

1.Kafedra entomologii Moskovskogo Gosudarstvennogo universiteta, Moskva.
(Kurgan--Frit flies)

MARCHUK, N.P.

Damage to corn sheets by the frit fly Oscinella pusilla Meig. Zool. zhur. 35 no.2:311-312 F '56. (MLRA 9:7)

1.Kafedra entomologii Moskovskogo gosudarstvennogo universiteta imeni M.V.Lomonosova.
(Corn (Maize)--Diseases and pests) (Frit flies)

MARCHUK, N.P.

Species of the genus Oscinella Beck. (Diptera, Chloropidae) in European Russia and their host plants [with summary in German]. Ent.obozr.35 no.4:856-882 '56. (MLRA 10:2)

1. Zoologicheskiy institut Akademii nauk SSSR, Leningrad.
(Frit flies) (Grasses--Diseases and pests)

NARCHUK, E. P.

USSR / General and Special Zoology. Insects P

Abs Jour: Ref Zhur-Biol., No 1, 1958, 2224.

Author : E. P. Narchuk
Inst :
Title : On the Identification of the Larvae and Pupae of Herbaceous Gnats Oscinella frit L and those of Oscinella pusilla Meig. (Diptera, Chloropidae)

Orig Pub: Zool. zh., 1956, 35, No 6, 868-873

Abstract: The various species of herbaceous gnats of the Oscinella family (particularly O. pusilla Mg. and O. frit L.) are easily identified in accordance to the position and structure of the small thorns on the larvae age III as well as according to the pupae. General description, complete and detailed figures of the larvae age III of barley gnats and oat gnats. Determinative tables for the two above-mentioned species.

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MARCHUK, E.P. (Leningrad)

On a polar day. Priroda 45 no.6:127-128 Je '56. (MLRA 9:8)

1. Zoologicheskiy institut Akademii nauk SSSR.
(Arctic regions--Birds)

MARCHUK, E.P.

Guests from the North. Priroda 45 no.11:125 N '56. (MLRA 9:11)

1. Zoologicheskiy institut Akademii nauk SSSR, Leningrad.
(Birds--Migration)

NARCHUK, Ye.P., kandidat biologicheskikh nauk.

Ant lion. Priroda 45 no.11:126-127 N '56. (MLRA 9:11)

1. Zoologicheskiy institut Akademii nauk SSSR, Leningrad.
(Ant lions)

NARCHUK, E.P.

Phenological observations. Geog. v shkole 20 no.2:42-44 Mr-Ap '57.
(Phenology) (MLRA 10:4)

MARCHUK, E.P., kandidat biologicheskikh nauk.

Winter insects. Priroda 46 no.3:126 Mr '57. (MLRA 10:3)

1. Zoologicheskiy institut Akademii nauk SSSR.(Leningrad)
(Insects)

NARCHUK, E.P.

Two new Palaearctic species of Chloropidae (Diptera). Trudy Zool. inst. 24:99-102 '58. (MIRA 11:10)
(Frit flies)

NARCHUK, E.P.

A new Palaearctic genus and species of Chloropidae (Diptera) [with summary in English]. Ent. oboz. 38 no.2:472-474 '59. (MIRA 12:7)

(Kazakhstan--Frit flies) (Ryazan Province--Frit flies)

NARCHUK, E.P.

Note on frit flies (Diptera, Chloropidae) in the Oka bottom lands. Zool.zhur. 38 no.8:1264-1267 Ag '59.
(MIRA 12:11)

1. Zoological Institute of the Academy of Sciences of the U.S.S.R., Leningrad.
(Oka Valley--Frit flies)

ARNOL'DI, L.V.; BORKHSENIUS, N.S.; GUR'YEVA, Ye.L.; DERBENEVA, N.N.; YEMEL'YANOV, A.F.; KERZHNER, I.M.; KUZNETSOV, V.I.; LISINA, L.M.; MISHCHENKO, L.L.; NARCHUK, E.P.; SHAPIRO, I.D.; SHAPOSHNIKOV, G.Kh.; SHTAKEL'BERG, A.A.; PUKHAL'SKAYA, L.F., red.izd-va; KRUGLIKOVA, N.A., tekhn.red.

[Insect pests of corn in the U.S.S.R.; reference book] Nasekomye, vrediashchie kukuruze v SSSR; spravochnik. Moskva, 1960. 227 p. (MIRA 13:3)

1. Akademiya nauk SSSR. Zoologicheskiy institut. 2. Zoologicheskiy institut AN SSSR (for Arnol'di, Borkhsenius, Gur'yeva, Derbeneva, Yemel'yanov, Kerzhner, Kuznetsov, Mishchenko, Narchuk, Shaposhnikov, Shtakel'berg). 3. Vsesoyuznyy institut zashchity rasteniy Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Lisina, Shapiro).

(Corn (Maize)--Diseases and pests)
(Insects, Injurious and beneficial)

MARCHUK, E.P.

Biology of flies of the genus Dicraeus (Diptera, Chloropidae) infesting grain crops. Ent. oboz. 39 no.3:585-593 '60. (MIRA 13:9)

1. Zoologicheskiy institut Akademii nauk SSSR, Leningrad.
(Frit flies)